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*Publications of the**W Aurigæ.*

Occasional observations of this star were taken as follows: 1904—January 4, 12, and 21, February 5. Invisible.

The maximum was predicted for August 15th, but cloudiness delayed observation until the 20th, when it was invisible, though *k* and *l* of 11 and 11.5 magnitude were distinctly seen. The morning was clear and a high power was used. On September 8th it was also invisible, though *k* was discernible in a hazy atmosphere.

X Aquilæ.

As the minimum of *X Aquilæ* was due on July 21, 1904, its vicinity was observed with a four-inch telescope, in which stars of twelfth magnitude are discernible in very clear weather. Seventeen observations were taken from the 11th of June to the 12th of September, but it was invisible. Several of the evenings were very clear. It may have decreased below twelfth magnitude.

PLANETARY PHENOMENA FOR SEPTEMBER AND
OCTOBER, 1904.

BY MALCOLM MCNEILL.

PHASES OF THE MOON, PACIFIC TIME.

Last Quarter, Sept. 2, 6 ^h 58 ^m P.M.	Last Quarter, Oct. 2, 5 ^h 52 ^m A.M.
New Moon, " 9, 12 43 P.M.	New Moon, " 8, 9 25 P.M.
First Quarter, " 16, 7 13 A.M.	First Quarter, " 15, 9 54 P.M.
Full Moon, " 24, 9 50 A.M.	Full Moon, " 24, 2 56 A.M.
	Last Quarter, " 31, 3 13 P.M.

The autumnal equinox, the time when the Sun crosses the Equator from north to south, occurs September 23d, 4 A.M., Pacific time.

The second of the two eclipses of the year occurred September 9th. It was a total eclipse of the Sun, but it was not visible from any part of the United States. The line of totality ran across the Pacific from a position eastward of the Caroline Islands to the western coast of South America. Unfortunately there are practically no good observing stations along the line as seen on ordinary maps. This is doubly

unfortunate as the duration of totality is a long one, $6^m\ 24^s$, and this would give an unusually good opportunity for observations of the outer portions of the corona, while the brighter inner parts are behind the Moon's disc, more than in an eclipse of shorter duration, the apparent disc of the Moon being larger than that of the Sun by an amount unusual at a time of eclipse. The duration of totality was about the same for the eclipse of May 17, 1901, but the average duration in total solar eclipses is only about half as great.

Mercury on September 1st is an evening star, setting about half an hour after sunset. It rapidly nears the Sun and passes inferior conjunction on September 15th. From that time until the last night in October it is a morning star. It reaches greatest west elongation, $17^\circ\ 54'$, on October 1st, and then rises an hour and a half before sunrise. Until the middle of October the interval is an hour or more. The period is therefore a good one for seeing the planet as a morning star. The planet will be quite near the Moon on the evening of October 7th.

Venus is now an evening star, and has moved far enough away from the Sun to be seen in the evening twilight soon after sunset. It sets about forty minutes after the Sun on September 1st, an hour on October 1st, and an hour and a half on November 1st. It passes about 3° north of *Spica, a Virginis* on September 23d. There is a close approach to the Moon on the evening of September 10th, the day after New Moon.

Mars is a morning star, slowly falling behind the Sun in their common eastward motion. It rises a little after 3 A.M. on September 1st, and at a little after 2 A.M. on October 31st. It moves 36° eastward and 13° southward from *Cancer* into *Leo*, and on September 28th passes about 1° north of *Regulus, a Leonis*. Its actual distance from the Earth has begun to diminish, and there is a consequent increase in brightness, but it does not amount to much as yet. However, there will be no difficulty in seeing it, as it will be brighter than a second-magnitude star.

Jupiter rises at 8:40 P.M. on September 1st, at 6:36 on October 1st, and at 4:20 on November 1st. It reaches opposition with the Sun on the afternoon of October 18th. It moves about 6° westward and nearly 3° southward in the

constellation *Pisces*. There are few bright stars in that region of the sky. The late autumn and early winter evenings will give a fine opportunity for observations of this planet.

Saturn is also in good position for evening observation. It is on the southern meridian at 10:33 P.M. on September 1st, and at 6:27 P.M. on November 1st, and sets about five hours later than its time of meridian passage. It moves westward about 2° in the eastern part of *Capricorn* until October 19th, and then begins to move slowly eastward.

Uranus is in the southwestern sky in the evening. It is on the meridian at 7 P.M. on September 1st, and at 3:06 P.M. on November 1st, and sets about four and one half hours later. On account of its faintness it cannot be seen with the naked eye except when it is at a considerable distance from the horizon. It is stationary on September 4th, and then begins to move slowly eastward, moving about $1^{\circ} 30'$ up to the end of October. It is west and a little north of the group known as "the milk dipper," in *Sagittarius*, but no bright stars are very near.

Neptune is in *Gemini*. Toward the end of October it rises about 9 P.M.

During the early morning of October 27th the Moon will pass over the *Hyades* group in *Taurus*, and a number of the brighter stars will be occulted.

PLANETARY PHENOMENA FOR NOVEMBER AND DECEMBER, 1904.

By MALCOLM MCNEILL.

PHASES OF THE MOON, PACIFIC TIME.

New Moon, Nov. 7, 7 ^h 37 ^m A.M.	New Moon, Dec. 6, 7 ^h 46 ^m P.M.
First Quarter, " 14, 4 35 P.M.	First Quarter, " 14, 2 7 P.M.
Full Moon, " 22, 7 12 P.M.	Full Moon, " 22, 10 1 A.M.
Last Quarter, " 29, 11 38 P.M.	Last Quarter, " 29, 7 46 A.M.

The Sun reaches the winter solstice and winter begins December 21st, 10 P.M., Pacific time.

The Earth is in perihelion December 31st, 9 P.M., Pacific time.